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ABSTRACT

The adoption, use, and refinement of an operational model for comparing academic programs and evaluating their needs in 200 postsecondary institutions of all types are discussed. The study was conducted in 1975-76 of all 5,375 degree programs in Pennsylvania. To aid in using the model, the following areas are reviewed: (1) the data items included in the study; (2) the indices and their values for sample degree programs; (3) the specific resources available to the institutions that were studied; and (4) recommendations. In addition to descriptors of the academic degree program and the institution in which it was located, data items were derived from 44 questions sent to the institutions. The eight indices concern: geographic coexistence or geographic program duplication; program similarity; graduate production; availability; student demand for the program; student demand for location; institutional need for the program; and a manpower code. Recommendations came from three sources: the technical report, a policy statement, and the staff of the State Board of Higher Education. Suggestions for replication of the study of degree programs are offered. (SW)

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USING COMPARATIVE INDICES OF ACADEMIC PROGRAMS IN INSTITUTIONAL, REGIONAL, AND STATE-LEVEL PLANNING AND DECISION MAKING: EVOLUTION OF A MODEL

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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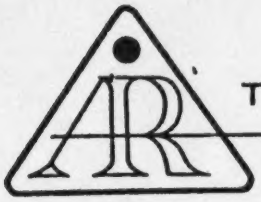

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twentieth Annual Forum of the Association for Institutional Research held at the Peachtree Plaza Hotel in Atlanta, Georgia, April 27 - May 1, 1980. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

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Abstract

Because of current conditions in postsecondary education, higher priority is being given in planning and policy decisions to justifying academic programs. The methodology for comparing programs is, however, still evolving. A large eastern state has just completed a four-year effort to develop an operational model for comparing academic programs in 200 postsecondary institutions of all types. This paper reports experience with this program analysis model in order to inform researchers, planners, and policy-makers at institutional, regional, and state levels about its adoption, use, and refinement.

This model for using comparative indices of academic programs at various levels--institutional, regional, and state--of planning and decision making is described in detail in a chapter (Martorana and Kuhns, 1978b) of Research and Planning for Higher Education, published by the Association for Institutional Research (AIR). In the present paper, we will emphasize how the model has evolved so far and how it may be used.

Summary of the Model

The following excerpt from an article that appeared in Research Currents, a publication of the American Association for Higher Education (AAHE), will serve to introduce the model:

> A comprehensive study of all 5,375 degree programs in Pennsylvania in 1975-76 was the first (and perhaps the last) massive effort by cooperating institutions to take the initiative for program review themselves. With funding from Buhl, Carnegie and Lilly Foundations, this project (directed by the co-authors of this paper) began with the program inventory already prepared by the State Department of Education. Using a unique model designed for this purpose, the study proceeded to identify and describe geographically coexisting programs, drawing on basic HEGIS information as well as institutional data.
>
> Using distance criteria that varied with the degree level (for instance, 30 miles for an associate degree, statewide for the doctorate), an index of geographic coexistence was developed for each of the 3,943 programs which was subsequently "paired" with another program at the same degree level. Some institutions located close to similar institutions (for example, two liberal arts colleges) found that almost all of their programs were paired and thus the subject of more intensive review through the questionnaire developed for paired programs. The institutions responsible for this universe of paired or geographically coexisting programs were then sent a questionnaire asking for information about the institutional setting, program objectives, admission requirements, faculty, majors,

credit distribution, instructional characteristics, degrees conferred, and institutional impact of the program. In general, institutions with established data systems found the review process easier than those who were dependent on manual accounting procedures to determine, for example, student credit hours within and beyond the major concentration, faculty load, and compensation. Considering the task involved, the response rate was remarkably high (Kuhns and Martorana, 1977, p. 20). Of the 226 institutions (public, private, proprietary) included in the study, 201 or 89 percent had one or more paired programs; 79 percent of these institutions responded with one or more questionnaires.

The technical report (Kuhns and Martorana, 1977) of this study contains some 200 tables showing relationships among the key variables. In the model, eight indices were developed from the HEGIS and questionnaire data, including the already mentioned index of geographic coexistence, two indices of student demand, manpower demand, institutional need, graduate production, availability, and similarity of paired programs. (Martorana and Kuhns, 1978a, pp. 2-3)

Progress Toward Utilization

On July 12, 1974, the Pennsylvania State Board of Education's Council of Higher Education passed a resolution calling for the Pennsylvania Association of Colleges and Universities (PACU) and the Pennsylvania Association of Private School Administrators "to cooperatively develop and forward to the Board recommendations with respect to resolution of the problem of unnecessary duplication among the segments."

As a result, a comprehensive study of Pennsylvania degree programs was initiated in October 1975; the technical report mentioned in the excerpt above was delivered in early 1977. In addition to the information called for by the original design, the technical report included data on program availability in two contiguous states, New York and Ohio, provided with the cooperation of officials from those states. Thus, comparative data for Pennsylvania, New York, and Ohio were displayed (by four-digit HEGIS code and degree level) as an auxiliary index of degree program availability per one million adults aged 18 and older.

PACU issued an executive summary and policy statement about the study in August 1977 and presented a report to the State Board of Education's Council of Higher Education (from which the original resolution had come) in January 1978. The Council, in turn, referred this report to the staff of the Department of Education for analysis and recommendations. This analysis was issed in April 1978. In August of the same year, an Institutional User's Manual (Holmes, 1978) was made available to those Pennsylvania colleges, universities, and degree-granting proprietary schools that had participated in the study. By the following January, the broadly representative Utilization Committee established by PACU had published a more detailed supplement to this manual (Holmes, 1979).

At this point, the study data were three years old, funds for updating the extensive data base were not available, and individual institutions were still uneasy about giving the State Board of Education access to their own confidential data (as opposed to the HEGIS data on institutions, which are publicly available). Meanwhile, the PACU leadership had concluded that, even though there is relatively little unnecessary program duplication in Pennsylvania, "there are nonetheless a number of possible soft spots at the level of geographical density and programs with low demand. These must be identified and evaluated at the institutional level" (PACU, 1977, p. 16).

By the fall of 1979, PACU had established two related committees--performing "technical" and "steering-oversight" functions--to consider what further steps should be taken in utilizing the data and the model at the institutional, regional, and state levels. To this end, background papers have been commissioned for discussion by the committees at a meeting scheduled for the spring of 1980. At this writing, then, more than four years after the study was initiated, the PACU

committees are still engaged in helping individual institutions to put this extensive data resource and model to work for them.

Utilization is a complex phenomenon. As an aid to understanding, this paper will first review some of the key elements of the study. It will then summarize recommendations from three sources--the technical report, the PACU leadership, and the staff of the State Department of Education--and responses to these recommendations. The next section discusses the nature of the institutional and agency interaction that has taken place in the course of this project; this interaction has been a vital element in the development of the utilization model as well as in the success of the entire undertaking. The paper concludes with some suggestions for Pennsylvania and for other states which might be interested in replicating this comprehensive study of degree programs.

Review of Key Elements

The data items used in the study, the indices developed from them, and the resources made available to participating institutions are described briefly below.

Data Items

The data for the study included 17 standard descriptors of the academic degree program and the institution in which it was located; this information was available from public sources such as HEGIS (Kuhns and Martorana, 1977, Appendix D). In addition, for those 3,943 programs found to be "paired," institutions were asked to provide further information by responding to 44 questions.

The resulting data base constituted a matrix of unit records (matrix rows) for 5,375 degree programs, with columns for institutional and program descriptors, including--in the case of the 3,943 paired programs--responses to the 44 questions. Most of the eight indices were created by relating one matrix column to another.

Additional relationships may be examined by generating ratio or index values from other matrix columns.

Indices

The eight indices reflect the basic concern of the study: to explore the need, availability, supply, and possible oversupply of academic programs in Pennsylvania. They are most helpful in describing a given program when used as a set of eight rather than individually. Table 1 shows values on the eight indices for several degree programs (see Kuhns and Martorana, 1977, Appendix F). Programs at each degree level were ranked in terms of their values on each of the indices; Table 1 includes these tied ranks (TR) to the right of each index value. Values of -1.00 indicate missing data. The curriculum titles of the five programs used as examples in Table 1 are as follows: Business and Commercial Technologies, General (5001); Chemistry, General (1905); Biology, General (401); Theological Professions, General (2301); and Mathematics, General (1701).

The eight indices are explained in detail in the Technical Report (Kuhns and Martorana, 1977) and in the appended paper. They may be summarized as follows:

- o Index of geographic coexistence. This index, basic to the entire design of the study, is defined as the number of "pair credits" per degree program and was developed to indicate the program's level of geographic program duplication. A degree program is regarded as being paired if there is at least one other program designated by the same four-digit HEGIS code within a specific geographic distance from it (30 miles at the associate degree level, 50 miles at the baccalaureate and master's degree levels, and statewide at the first professional and doctorate levels). To calculate this value, each member of a

	MEGIS	DEG LEV	DEG	REG	COEXIST INDEX	TR	AVAIL INDEX	TR	GRAD INDEX	TR	SIM INDEX	TR	STU-PRO INDEX	TR	STU-LOC INDEX	TR	INSTIT INDEX	TR	MANPOWER CODE
ASSOCIATE LEVEL																			
	5001	1	O/A	1	6.5	2	5.03	2	-1.0	114	0.480	98	0.00306	74	0.03383	156	0.00588	197	3
	5001	1	AA	1	6.0	3	5.03	2	14.3	71	0.481	97	0.00044	124	0.00483	207	0.01087	176	3
	5001	1	AA	8	2.5	10	5.03	2	2.0	106	0.574	43	0.04391	1	0.48479	21	0.37545	21	3
BACCALAUREATE LEVEL																			
	1905	2	BS	2	24.5	1	13.77	3	3.0	267	0.566	199	0.00011	211	0.00532	732	0.00237	1233	2
	1905	2	BSED	1	23.5	2	13.77	3	8.0	252	0.553	212	0.00004	216	0.00199	821	0.00138	1313	2
	1905	2	BS	2	22.5	3	13.77	3	-1.0	276	0.518	247	0.00016	208	0.00731	686	0.01714	634	2
MASTERS LEVEL																			
	401	3	MA	1	7.5	1	4.55	2	19.7	75	0.497	148	0.00050	91	0.03401	200	-1.00000	274	4
	401	3	MS	2	7.5	1	4.55	2	-1.0	133	0.530	128	0.00077	83	0.05215	174	0.00239	148	4
	401	3	MA	1	5.5	5	4.55	2	-1.0	133	0.488	156	0.00174	63	0.11791	130	0.00045	245	4
FIRST PROFESSIONAL LEVEL																			
	2301	4	FP	1	6.0	1	1.56	1	-1.0	8	0.313	26	0.00025	17	0.01527	16	0.15769	9	1
	2301	4	FP	1	6.0	1	1.56	1	-1.0	8	0.296	27	0.00083	16	0.05089	15	0.40954	8	1
	2301	4	FP	1	6.0	1	1.56	1	35.3	4	0.335	23	0.00413	12	0.25445	9	0.96342	4	1
DOCTORAL LEVEL																			
	1701	5	PHD	1	5.5	1	1.20	1	3.3	32	0.377	143	0.00085	67	0.09589	106	0.00141	61	2
	1701	5	PHD	1	5.5	1	1.20	1	-1.0	42	0.403	124	0.00004	27	0.90411	8	0.00089	77	2
	1701	5	PHD	5	4.0	4	1.20	1	6.7	22	0.347	169	-1.00000	75	-1.00000	136	0.00071	86	2

Table 1. Summary of indices for sample programs.

pair of programs is assigned half (.5) of the "pair credit" designated for the pair.

- Index of program similarity. This index is based on a comparison of the two programs in each pair over the entire range of data items (descriptors). The procedures for calculating this value are described in the Technical Report and in the appended paper.
- Index of graduate production. This index represents the average number of graduates per year produced by a program, based on information for three years.
- Index of availability. This index represents the number of academic degree programs of a specific kind (that is, designated by the same four-digit HEGIS code) per million population aged 18 years and older.
- Index of student demand for the program. This index is expressed as the ratio of the applicants for a particular program to the applicants for all paired programs--in all disciplines--at the same degree level in the state.
- Index of student demand for location. This index is expressed as the ratio of the applicants for a particular program to the applicants for all paired programs statewide belonging to the same HEGIS classification.
- Index of institutional need for the program. This index is expressed as the ratio of the full-time equivalent (FTE) majors in a paired program to the institution's total FTE opening fall enrollment in the base year.

- o Manpower code. This is an indicator code rather than an index; it represents the relation between projected program graduates and projected job opportunities. Two code values (1 and 3) indicate a favorable relation; two codes (2 and 4) represent an unfavorable relation; and a fifth code indicates that the available information was insufficient for making this determination.

Resources from the Study Sent to Institutions

Each of the 226 institutions participating in the study received five items: (1) the executive summary and PACU policy statement about the study and its findings (PACU, 1977); (2) the technical report (Kuhns and Martorana, 1977), which includes more than 200 tables presenting aggregate data about the 5,375 programs, describes the study design, and makes some general recommendations; (3) a computer printout for each of the institution's degree programs, in the form of that program's unit record for all the data items gathered and indices generated; for the institution as a whole, the unit records of all programs constitute a data matrix, with degree programs as rows and data items as columns; (4) a separate computer list of the institution's degree programs along with a corresponding list (for each program) of any and all neighboring programs which are "paired" according to the distance criteria used in the study; and (5) an Institutional User's Manual (Holmes, 1978), followed by a supplement (Holmes, 1979).

The first and second items are available to the general public, although only a limited number were reproduced. The data matrix described in item #3, however, is available only to the institution. Item #4 is semiprivate in that this list of paired programs was sent not only to the home institution but also to the institution at which any "paired" program is located.

In addition to these standard materials sent out to the institutions, PACU has the data tapes containing the complete matrix of unit records for the state's 5,375 programs. Although the data are no longer current, the format is intact, to facilitate updating and the establishment of trend lines. While some of the data could be updated at relatively modest cost, using information from the annual HEGIS, it would be difficult and expensive to update the non-public data, which came originally from the individual institutions, specifically for this project.

Recommendations and Responses

Recommendations based on the findings of the study came from three sources: the technical report (Kuhns and Martorana, 1977), the PACU (1978) policy statement, and the report of the staff of the Pennsylvania Department of Education (1978). In addition to summarizing the recommendations, we will describe briefly what (if anything) has been done to implement them.

Technical Report

The recommendations in the technical report include the following: The study should be updated regularly; the results should be made available to institutional researchers, planners, and decision-makers; data gathering should be articulated with other such efforts (for example, the HEGIS reports) regularly carried out by the State Department of Education; the interstate information exchange begun in the study should continue; whenever possible, institutions that lack an internal research capability should be assisted; certain categories of programs excluded from the original study (for example, certificate programs) should be covered in any future study; additional variables describing program

quality and costs should be identified and used; the index of similarity should be applied to specific subsets of variables; and the relative weighting of variables should be refined.

Most of these recommendations concern "the next time" and so have not been implemented, because the data base has not been updated since it was created in 1975-76. Nonetheless, the recommendations themselves seem as appropriate in 1980 as they were in early 1977.

PACU Policy Statement

The recommendations made by PACU are of four kinds: those pertaining to the institutions, those pertaining to the regions, those pertaining to the state, and those pertaining to PACU itself.

Recommendations for the Institutions. The institutional data base generated by the study should be used to support institutional planning, including program modifications and initiatives. Institutions should be encouraged to develop master plans that provide for the evaluation of duplicative programs. In a period of possible enrollment declines, institutions should consider programmatic alternatives such as terminating specialized courses essential to a major while retaining a strong program of general studies, maintaining the major but sharing specialized classes with nearby institutions, or concentrating upon sets of majors with high priority to the institution and dropping others of lower priority.

Anecdotal evidence indicates that the institutions are using the study materials that were sent to them (the technical report, the executive summary and PACU policy statement, the data base for their own programs, a list of nearby programs which in title duplicate their programs, and the user's manual and supplement) as materials in their own planning efforts.

Recommendations for the Regions. The educational planning organization in each region should be the primary mechanism for interinstitutional coordination of program offerings; if this effort is to be successful, some funding will be necessary.

Regional meetings have been held to assist institutions in using the available materials from the study, and there has been some interinstitutional discussion by two or more contiguous institutions. Although the regional councils provide a formal structure for interinstitutional cooperation, efforts to address the problem of currently coexisting degree programs have been rudimentary at best, even when enrollments in each of those programs are declining. In contrast, any new degree program which may duplicate a program at a neighboring institution is subjected to careful scrutiny, at the institutional as well as the state and regional levels. Funding for regional councils continues to be a political decision, and lack of adequate resources has hampered the cooperative efforts of the constituent institutions.

Recommendations for the State. The aggregate data, findings, and conclusions of the study should be used in developing the new State Master Plan for Postsecondary Education and in formulating state-level program policies. A mechanism for sharing program information with other states should be developed.

The Council of the State Board of Education sent the study's technical report and the PACU policy statement to its staff arm, the Department of Education, for comment and recommendations (see below). The study findings, in aggregate form, were used in preparing the new State Master Plan. To date, no formal arrangements have been made with contiguous states to share program data, despite the groundwork that was laid in this study.

Recommendations for PACU. The study's structured data base should be maintained with reasonably current information for planning and evaluation purposes.

Institutions or sets of institutions should be able to update their own unit records for immediate use. Techniques used in the study should be refined, with particular attention to data on emerging student and societal needs for postsecondary education.

So far, the data base has not been updated, either by PACU itself or by individual institutions.

State Department of Education Staff Report

Recommendations. A statewide report by four-digit HEGIS code (rather than aggregated information) should be made available to the State Board of Education and to the Pennsylvania Department of Education (PDE); a regional report by four-digit HEGIS code should be made available to each regional planning council. The regional councils, in cooperation with PACU, should monitor and assist with local in-depth analysis of paired programs and of needed programs. PDE should be responsible for maintaining and updating those parts of the data base that derive from public information. The State Board should formulate whatever policies are deemed necessary on the basis of statewide, regional, and institutional analyses.

The unit records for the 3,943 paired programs contain not only publicly available data but also data based on institutional responses to a questionnaire that carried with it a promise of confidentiality; since institutions remain unwilling to release the latter part of their unit records to the State Department of Education, it has been impossible to implement some of the above recommendations. Cost is another problem; no state funds seem to be available for updating the public data items in the unit records or for moving on to in-depth studies of paired programs.

Dynamics of Evolutionary Change

The experience of the PACU project provides much more than the model for systematically examining academic programs that has been emphasized thus far; it

also provides insight into the dynamics of the institutional and organizational interaction which inevitably occurs in a project of such size and complexity. Although a full description and assessment of these dynamics is beyond the scope of this paper, a brief account of their nature and impact on the project is possible and, indeed, essential if institutional reseachers and state-level planners and decision-makers are to arrive at a complete understanding of what happened in the course of the project. Such a discussion should give further meaning to the model which was one of the project's principal outcomes and should enlighten subsequent attempts to use the model and the related data base.

At the outset, the project was identified as an accommodation to a changing reality in academic program planning and decision making, a reality that requires institutions to deal specifically and consciously with neighboring institutions engaged in similar academic missions. Generally, external groups have been more active in seeking academic reform than have individual institutions or even sectors of institutions. In the PACU case, the initiative came from the State Board of Education when it passed a resolution calling for a review of program duplication and asking PACU for advice on how such a review might be conducted. The leadership groups in PACU deliberated for some time on the challenge posed by the resolution. PACU comprises four groups of member institutions, each operating under a commission: the independent colleges and universities, the commonwealth universities, the state colleges and universities, and the public community colleges. One of the first expansions of the dynamics involved, therefore, was generated by that part of the State Board's resolution which required that proprietary schools authorized to offer associate degrees be included in the study.

Sensing the need to provide a structure for the dynamics likely to develop around the project, the PACU leadership created two committees to oversee and set policy for the conduct of the project, the preparation of the technical report, and the formulation of recommendations ultimately forwarded to the State Board of Education. At one level, a special statewide committee was to work closely with the project director and supervisor on the technical aspects of the project; its members were persons designated by the PACU Executive Committee or by institutions in the eight sectors of higher education touched by the project, including a number of institutional researchers and planners and several institutional chief executives. The main purpose of this committee was to encourage and insure institutional cooperation and to keep the project focused on a "value-free" assessment of program coexistence and similarity. By "value-free" was meant a detachment from the larger policy issues likely to emerge as the study outcomes--and their potential impact on existing institutional and state-level policies related to academic programming--became more clear. Operating between this committee and the PACU Executive Committee (which received and reviewed all progress reports, as well as the final report, as they moved to PACU and later to the State Board of Education) was a second, more policy-oriented, committee, whose members were chief executives of PACU-affiliated institutions.

As expected, all of these components quickly became forums for deliberations reflecting the interests and concerns of the project participants and dramatizing the complexity of the project. Spokespersons or "actors" representing all eight types of institutions--proprietary schools, public community colleges, private two-year colleges, independent colleges and universities, state-owned colleges, state-related universities, state-aided universities, and off-campus centers and

branch campuses--quickly emerged and could be counted on to express the particular perspective of their institutions as the project progressed. Added to this complex of special institutional interests were the voices of the voluntary state association (PACU), which saw itself as an "umbrella" organization concerned with the common development of all its member institutions, and of the State Department of Education, whose representatives were also present at the deliberative sessions. Thus, organizational interaction over the study and its implementation was complicated and intense.

Our close experience with the project and our continuing examination of the nature of the deliberations that took place and of the study outcomes prompt us to make several observations that may be helpful to institutional researchers and to academic planners and decision-makers:

1. The structure and process that were established contributed to the high level of cooperation and general support so essential to the conduct of project activities and the fulfillment of institutional reporting requirements.

2. The approach also facilitated adoption of a conceptualization and design for conducting and reporting the technical aspects of the study; the model proposed became a common and officially endorsed approach.

3. Deliberations about the broader policy implications of project outcomes and about how the findings might be used in the state could be postponed until the more objective data were in hand.

4. As a consequence, discussions about what follow-up actions should be taken and how interested institutions and agencies could continue to be involved in later utilization of outcomes for extensions of the project were made easier.

5. The continuing validity of the approach is demonstrated by its being

reiterated in the technical and the steering or oversight committees (mentioned earlier), which are now operating.

Conclusions and Recommendations

We will conclude this paper by simply listing some major conclusions and some specific recommendations directed at institutional and state-level researchers, planners, and decision-makers in Pennsylvania and throughout the nation.

The five main conclusions are, first, that the model for objectively examining academic program coexistence and similarity (and thereby duplication), as developed in the project, is conceptually sound and operationally useful, though it needs to be refined. Second, using the model on a statewide basis would, for most states, be a sizable undertaking, requiring that individual institutions, groups of institutions in a region or a sector, and state agencies be strongly committed to cooperate fully if success is to be insured. Third, the model can nonetheless be initiated in partial form and at much lower cost by drawing on HEGIS data for some twenty variables. Fourth, the model has potential for interstate regional studies of academic program offerings as well as for intrastate, regional, or local use. And fifth, using the model on a statewide basis generates momentum for continuing utilization of the approach and for the development of ways whereby it can be improved and extended.

Recommendations to interested readers follow the same general lines. Action to extend academic program review is increasingly demanded, but most such action currently involves efforts by individual institutions to examine their program offerings or the efforts by authoritative state agencies to examine specific programs or program areas in several institutions or statewide (Martorana and Kuhns, 1978; Barak, 1979). A review of the literature reveals few efforts to examine

comprehensively entire college offerings and little use of a generally conceptualized and accepted approach to examining program coexistence, similarity, and possible duplication by directly measuring variables that describe the programs in question. Therefore, readers are urged to view the model as a starting point for a different kind of effort.

Beyond this general recommendation, we suggest that, if statewide or regional efforts to use the model are thwarted by the costs involved or by difficulty in winning the cooperation demanded, then institutional researchers and planning personnel at individual colleges should move to get neighboring institutions to join them in using the model on a more localized basis. Such action could give these colleges a firmer basis on which to plan changes in academic offerings and to respond to intensifying requests that they justify the nature and purpose of their academic programs.

In addition, if large-scale interinstitutional efforts to use the model are not feasible, we recommend that interested colleges join in using the model by drawing only on existing HEGIS data, which are generally available to institutions and to the public. Such action would entail little or no additional cost or institutional effort in gathering data, nor would it raise the question of protecting privileged institutional information.

Finally, we recommend that stronger efforts be made to inform all interested parties (but especially the people whose orientation brings them to this conference) about the outcomes of work to develop and refine this model. The field needs to know what procedures are effective in advancing understanding of academic programs and their interrelationships from campus to campus and from state to state. In the future, more pressures will develop for fuller explanations of how decisions

about academic programs are made. All of us need to become as expert as possible in giving those explanations and in accounting for what is going on, and why.

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